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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,297	03/11/2002	Osamu Kobayashi	P67421USO	1654

136 7590 01/21/2004

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WASHINGTON, DC 20004

EXAMINER

PATEL, VISHAL A

ART UNIT	PAPER NUMBER
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3676

DATE MAILED: 01/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/018,297

Applicant(s)

KOBAYASHI ET AL.

Examiner

Vishal Patel

Art Unit

3676

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

1. The request filed on 11/12/03 for a Request for Continued Examination (RCE) under 35 USC 132(b) has been established. An action on the RCE follows.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3-4, 6-10, 12-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riesing (US. 2,804, 325) in view of Holzer (US. 4,750,747).

Riesing discloses a lip-type high-pressure seal (20) comprising:

Claims 1, 3-4, 6-10, 12-14 and 16:

an annular metallic casing (40);

an annular sealing lip (34) secured to the casing (the sealing lip is made of elastomer, column 2, line 12);

a low friction lining (lining 48 made of PTFE, column 3, lines 24-30) bonded to the sealing lip;

the sealing lip made of high gas barrier (high gas barrier is a relative term of gas barrier);

the sealing lip having a gas permeability;

the lip-type seal is for carbon dioxide gas under pressure of 4Mpa (intended use);

Art Unit: 3676

the low friction lining covers only a part of the sealing lip, which is brought into contact with a shaft to be sealed (portion directly under 34 and contacting the shaft, the liner does not cover the entire 21, 32 30 or fluid surface of 34);

the ratio of the radial thickness of the low friction lining with respect to the radial thickness of the low friction lining with respect to the radial thickness of the sealing lip is less than 20% (the lining material appears to have a thickness of less than 20% of the radial thickness of the sealing lip, so the ratio is met as much as of the applicants ratio);

the inner circumferential face of the low friction lining is provided with helical pumping elements (annular pumping elements 54, helical meaning a curved traced on a cylinder or a cone by rotation of a point) for hydrodynamically returning a fluid, having leaked from a sealed side to an atmospheric side, back to the sealed side;

the lip-type seal is installed on a shaft, which is surrounded by a housing (figure 1);

the lip-type is under pressure, to have a particular pressure is considered to be design choice or well know to one skilled in the art.

Riesing discloses the invention substantially as claimed above but fails to disclose that the sealing lip be made of polyamide (making the seal lip from polyamide will have a high gas barrier, a high modulus of elasticity and also will have a coefficient of less than 1×10^{-13} (cm³cm/cm²secPa) for carbon dioxide gas under pressure of 4MPa). Holzer discloses that a lip seal can be made of rubber-elastic material (elastomer) of polytetrafluoroethylene or polyamide (column 4, lines 55-60 of Holzer). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the sealing lip of Riesing to be made of polyamide as taught by Holzer, since having the sealing lip made of elastomeric material or

Art Unit: 3676

polyamide is considered to be art equivalent. Furthermore Holzer teaches that choosing a particular material for a sealing lip would take empirical testing (column 4, lines 55-60 of Holzer).

The method claims 12-14 and 16 are rejected by Riesing and Holzer (all the limitations of the method are necessary for the apparatus disclosed by Riesing and Holzer).

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Riesing and Holzer as applied to claim 1 above, and further in view of Obata et al (US. 5,860,656).

Riesing and Holzer disclose the invention substantially as claimed above but fail to disclose a second sealing lip made of resilient elastomeric material. Obata discloses a lip seal having a primary lip seal (9) and a secondary sealing lip made of elastomer (10). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the lip-type seal of Riesing and Holzer to have a second sealing lip as taught by Obata, to provide better leakage control or reduce leakage at all time, specifically when the shaft is not rotating (column 2, lines 17-20).

5. Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riesing and Holzer as applied to claims 1 and 12 above, and further in view of Goodman (US. 6,164,660).

Riesing and Holzer disclose the invention substantially as claimed above but fail to disclose that the sealing lip is made of a polymer material selected from group consisting of polyvinylidene fluoride, polyvinyl chloride, poly-chlorotrifluoroethylene and polyvinyl alcohol. Goodman discloses a sealing lip (18) made of elastomer or rubber elastomer material (column 9, lines 63-65) or a polymer material selected from group consisting of polyvinylidene fluoride,

Art Unit: 3676

polyvinyl chloride, poly-chlorotrifluoroethylene and polyvinyl alcohol (column 9, lines 45-51).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the sealing lip of Riesing and Holzer to be made of a polymer material selected from group consisting of polyvinylidene fluoride, polyvinyl chloride, poly-chlorotrifluoroethylene and polyvinyl alcohol as taught by Goodman, since having a sealing lip made of elastomer or rubber elastomer material or a polymer material selected from group consisting of polyvinylidene fluoride, polyvinyl chloride, poly-chlorotrifluoroethylene and polyvinyl alcohol is considered to be art equivalent or select material that provide seals in a specific environment (column 9, lines 40-65 of Goodman).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Blumenkranz, Voit et al and Muller et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vishal Patel whose telephone number is (703) 308-8495. The examiner can normally be reached on Monday through Friday from 7:30 PM to 4:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight, can be reached on (703) 309-3179.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-2168. Technology Center 3600 Customer Service is available at 703-308-1113. General Customer Service numbers are at 800-786-9199 or 703-308-9000. Fax Customer Service is available at 703-872-9325.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to: 703-872-9326, for formal communications for entry before Final action: or,
703-872-9327, for formal communications for entry after Final action.

Application/Control Number: 10/018,297

Page 6

Art Unit: 3676

For informal or draft communications, please label **"PROPOSED"** or **"DRAFT"** and fax to: 703-746-3814.

Hand-delivered responses should be brought to Crystal Park Five, 2451 Crystal Drive, Arlington, Virginia, Seventh Floor (Receptionist suite adjacent to the elevator lobby).

VP

January 8, 2004

A handwritten signature in black ink, appearing to read 'Vishal Patel', written in a cursive style.

Vishal Patel
Patent Examiner
Tech. Center 3600